Problem E: Out of Parachutes

The intrepid Indiana Jones, along with a couple of cohorts, has fled Shanghai before being caught by Lao Che, a mafia boss with whom he had a little business argument. However, the plane they use for their escape is actually owned by Lao Che, and Indy and his friends find themselves in trouble when the pilots jump from the plane with the only parachutes on board. Their only chance now is to jump using an inflatable life raft to break the fall.

Figure 1: Landing on the snow with the raft

Needless to say, using a raft for such a stunt is extremely dangerous, and considering the number of variables involved in a jump like this, their accomplishment is nothing short of miraculous.

We will, however, greatly simplify things. Let's assume that the life raft is perfectly circular with negligible mass, and that the only requirement to keep it stable and guarantee a safe landing is that the combined center of mass of all the people on top of it is inside a circle whose radius is 10% the size of the raft's radius.

If **N** people jump from a plane on a raft with radius **R**, and knowing the mass and the location of each person's center of mass, you will have to determine if the raft safely lands on the ground or not.

Input

Input starts with a positive integer **T**, that denotes the number of test cases ($T \leq 100$).

Each test case begins with a blank line. Next is a line with an integer **N** and a floating point number **R**, where N is the number of people on the raft, and R is the radius of the raft. $2 \leq N \leq 1000$. $0 < R \leq 100$.

N lines follow, each one with three floating point numbers, in order: the mass (**M**) and coordinates (**X**, **Y**) of the center of mass of one person. The coordinates are given relative to the center of the raft, which is located in the origin (coordinates $(0, 0)$), and you can assume that the center of mass of everyone is inside the radius of the raft. $0 < M \leq 200$.

All floating point numbers come with two digits after the decimal point.

Output

For each test case, print the case number, and then print **yes** if the center of mass of the N people is located inside a radius of $R/10$. Otherwise, print **no**.

Sample Input

```
2

3 3.00
72.00 0.20 0.50
```

```
65.00 0.45 0.00
45.00 -1.80 -1.60

3 3.00
72.00 0.20 0.50
65.00 0.45 0.00
45.00 -2.00 -1.50
```

Output for Sample Input

```
Case 1: yes
Case 2: no
```

Note

If we call D the distance from the origin to the combined center of mass, then it is guaranteed that, using double-precision data types, the absolute value of $|R/10 - D|$ is greater than 10^{-4}.